

announced Hayes's appointment a day before Rappaport, who was out of town, could inform his staff.

Hayes's appointment was unusual in more than one respect. At 34, he is the youngest director of a national laboratory. Hayes is also perhaps the only director of a national laboratory who does not have a high level of formal education in the field of research conducted at his laboratory. Hayes was an undergraduate at Stanford University and did some graduate work in law and business there as well, but has no formal training in science or engineering. He has been active as a solar advocate for several years, however. In addition to his activities at the Solar Lobby, he has served on the DOE's Energy Research Advisory Board, is the author of *Rays of Hope*, which focusses on the transition to a post-petroleum world, and in 1978 won the DOE's first award for outstanding public service.

Some SERI scientists take Hayes's appointment as a further indication of the much-feared politicization of the Institute, which they attribute to the highly political nature of solar energy in general. Hayes's appointment, however, is being applauded in other quarters, and most SERI employees appear ready to lend full support to their new director. —MEJ

DOE group recommends 53% budget hike for laser fusion

An Ad Hoc Experts Review Group headed by John S. Foster Jr has advised the Department of Energy to proceed cautiously with construction of Nova, the expansion of the Shiva neodymium-glass laser at the Lawrence Livermore Laboratory, and to increase the department's laser-fusion budget by 53% in the next fiscal year.

Nova. Last year a different group, also under Foster's chairmanship, studied the entire DOE fusion program and advocated that funding for Nova be delayed until present facilities and experiments demonstrate the predicted performance (PHYSICS TODAY, September 1978, page 85). That study looked at Nova only from a fusion energy production standpoint, according to Solomon Buchsbaum, executive vice-president at Bell Labs, who was a member of last year's group, whereas the present study incorporates military considerations as well.

The primary recommendation of the report, the body of which will be classified (presumably because of its discussion of the military uses of laser fusion) is that construction of the first phase of Nova be started immediately. DOE acted on that recommendation even before the Foster committee's final report had been completed; construction of Nova I began 14 May. In this first phase, costing \$137 million, a new target chamber and laser facility will be built adjacent to the Shiva laser. At present Shiva can produce 15 kilojoules in a 1-nanosec pulse. Com-



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pletion of the first phase of Nova is scheduled for late 1982. Nova I will typically produce a 3-nanosec pulse containing 120 kJ. In the second phase of Nova, the glass in the Shiva laser will be replaced with a new Nova glass, probably made of fluorophosphate, and the output of the new laser arms will be directed into the Nova target chamber. A decision on the second phase of Nova is expected in about two years. In the meantime, the Foster committee recommended that no action be taken that would either jeopardize or ensure construction of Nova II.

At a briefing before the DOE's Energy Research Advisory Board, Foster, a vice president at TRW, Inc, admitted that the committee had its doubts about the Nova experiment. "It is quite likely," he said, "that we would not go beyond Nova I... without changing technology..." Buchsbaum, chairman of ERAB, asked Foster if it were true that "the technology that underlies Nova is known to be ultimately inadequate to do the job," because Nova uses a glass laser, which is "intrinsically inefficient" from a power production point of view. Foster agreed that from a power production point of view with present solids this is true, but commented that "from the weapons point of view at, say, a megajoule, using a pulse once or twice a day or once every few minutes, the glass is perfectly acceptable from the point of view of performance and economics." According to Foster, the program that the committee recommended to DOE was optimized from both the weapons and the civilian power points of view.

Other programs. Though originally charged with examining only the Nova proposal, the Foster committee found it necessary to comment on some general aspects of DOE's inertial-confinement fusion program. The committee recommended that the Fiscal Year 1981 budget for inertial-confinement fusion, excluding

Nova construction, be increased to \$200 million, with an additional \$25 million set aside for Nova construction. This represents an increase of 53% over the 1980 level of \$130 million. Included in this increase must be an expanded physics research program to complement the already large machine construction now going on, the committee said.

"A critical part of the inertial-confinement fusion program is the comparison of the various ways of driving the pellets to determine which one, because of its combination of coupling efficiencies and cost, would be the system of choice," Foster told PHYSICS TODAY. Foster told ERAB that DOE should begin technological development of short-wavelength lasers, perhaps krypton fluoride (0.25-micron wavelength), and should further develop other high-energy drivers, with emphasis on heavy-ion beams. "And third," he said, "we would like to look at the pulse power systems, condenser banks with discharge nets that can generate a very intense proton beam. The requirement is to bunch the particle in order to have a short pulse, transport the beam several meters to the target and focus the beam to a small size."

"In general," Foster summarized, "there was no technological problem which we could identify that we couldn't find some kind of plausible, practical solution to. Now that is kind of exciting."

—MEJ

Congress debates Federal patent policy reform

For years critics of the Federal government's patent policy have complained that the government generally retains the rights to inventions and discoveries made under government-sponsored research even though it allocates neither the financial resources nor the expertise to develop them into marketable products. A Senate bill expected to go to markup this month in the Judiciary Committee addresses this problem as it relates to small businesses and universities. ("Markup" is the last stage of committee consideration of the bill before it goes to the full Senate for debate.) Though not the first bill of this type proposed in recent years (an earlier version of the bill was introduced in the Senate last year and never acted upon), S414 appears to have an exceptionally broad base of support. Introduced by Birch Bayh (D-Ind.) and Robert Dole (R-Kans.), the bill's 28 sponsors are almost evenly divided between Democrats and Republicans, and constitute what one committee staffer termed, "a good philosophical mix."

By retaining the rights to inventions, say the bill's supporters, the government removes much of the incentive for industry to develop and market those inven-

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